DEPARTMENT OF THE AIR FORCE
59TH MEDICAL WING (AETC)
JOINT BASE SAN ANTONIO - LACKLAND TEXAS

5 MAY 2017

MEMORANDUM FOR ST
ATTN: JASON M. RALL

FROM: 59 MDW/SGVU

SUBJECT: Professional Presentation Approval

1. Your paper, entitled **Evaluation of XStat and Combat Gauze in a Swine Model of Junctional Hemorrhage and Coagulopathy** presented at/published to **Special Operations Medicine Scientific Assembly, Charlotte NC, 21-25 May 2017** in accordance with MDWI 41-108, has been approved and assigned local file #**17225.**

2. Pertinent biographic information (name of author(s) title, etc.) has been entered into our computer file. Please advise us (by phone or mail) that your presentation was given. At that time, we will need the date (month, day and year) along with the location of your presentation. It is important to update this information so that we can provide quality support for you, your department, and the Medical Center commander. This information is used to document the scholarly activities of our professional staff and students, which is an essential component of Wilford Hall Ambulatory Surgical Center (WHASC) internship and residency programs.

3. Please know that if you are a Graduate Health Sciences Education student and your department has told you they cannot fund your publication, the 59th Clinical Research Division may pay for your basic journal publishing charges (to include costs for tables and black and white photos). We cannot pay for reprints. If you are a 59 MDW staff member, we can forward your request for funds to the designated Wing POC at the Chief Scientist's Office, Ms. Alice Houy, office phone: 210-292-8029; email address: alice.houy.civ@mail.mil.

4. Congratulations, and thank you for your efforts and time. Your contributions are vital to the medical mission. We look forward to assisting you in your future publication/presentation efforts.

for Dane Barnett
LINDA STEEL-GOODWIN, Col, USAF, BSC
Director, Clinical Investigations & Research Support

Warrior Medics – Mission Ready – Patient Focused

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH/TECHNICAL PUBLICATIONS/PRESENTATIONS

INSTRUCTIONS

USE ONLY THE MOST CURRENT 59 MDW FORM 3039 LOCATED ON AF E-PUBLISHING

1. The author must complete page two of this form:
   a. In Section 2, add the funding source for your study [e.g., 59 MDW CRD Graduate Health Sciences Education (GHSE) (SG5 O&M); SG5 R&D; Tri-Service Nursing Research Program (TSNRP); Defense Medical Research & Development Program (DMRDP); NIH; Congressionally Directed Medical Research Program (CDMRP) ; Grants; etc.]

   b. In Section 2, there may be funding available for journal costs, if your department is not paying for figures, tables or photographs for your publication. Please state "YES" or "NO" in Section 2 of the form, if you need publication funding support.

2. Print your name, rank/grade, sign and date the form in the author's signature block or use an electronic signature.

3. Attach a copy of the 59 MDW IRB or IACUC approval letter for the research related study. If this is a technical publication/presentation, state the type (e.g. case report, QA/QI study, program evaluation study, informational report/briefing, etc.) in the "Protocol Title" box.

4. Attach a copy of your abstract, paper, poster and other supporting documentation.

5. Save and forward, via email, the processing form and all supporting documentation to your unit commander, program director or immediate supervisor for review/approval.

6. On page 2, have either your unit commander, program director or immediate supervisor:
   a. Print their name, rank/grade, title; sign and date the form in the approving authority's signature block or use an electronic signature.

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8. The 59 CRD/Publications and Presentations Section will route the request form to clinical investigations, 502 ISG/JAC (Ethics Review) and Public Affairs (59 MDW/PA) for review and then forward you a final letter of approval or disapproval.

9. Once your manuscript, poster or presentation has been approved for a one-time public release, you may proceed with your publication or presentation submission activities, as stated on this form. **Note:** For each new release of medical research or technical information as a publication/presentation, a new 59 MDW Form 3039 must be submitted for review and approval.

10. If your manuscript is accepted for scientific publication, please contact the 59 CRD/Publications and Presentations Section at 292-7141. This information is reported to the 59 MDW/CC. All medical research or technical information publications/presentations must be reported to the Defense Technical Information Center (DITC). See 59 MDWI 41-108, *Presentation and Publication of Medical and Technical Papers*, for additional information.

11. The Joint Ethics Regulation (JER) DoD 5500.07-R, *Standards of Conduct*, provides standards of ethical conduct for all DoD personnel and their interactions with other non-DoD entities, organizations, societies, conferences, etc. Part of the Form 3039 review and approval process includes a legal ethics review to address any potential conflicts related to DoD personnel participating in non-DoD sponsored conferences, professional meetings, publication/presentation disclosures to domestic and foreign audiences, DoD personnel accepting non-DoD contributions, awards, honoraria, gifts, etc. The specific circumstances for your presentation will determine whether a legal review is necessary. **If you (as the author) or your supervisor check "NO" in block 17 of the Form 3039, your research or technical documents will not be forwarded to the 502 ISG/JAC legal office for an ethics review.** To assist you in making this decision about whether to request a legal review, the following examples are provided as a guideline:

    For presentations before professional societies and like organizations, the 59 MDW Public Affairs Office (PAO) will provide the needed review to ensure proper disclaimers are included and the subject matter of the presentation does not create any cause for DoD concern.

    If the sponsor of a conference or meeting is a DoD entity, an ethics review of your presentation is not required, since the DoD entity is responsible to obtain all approvals for the event.

    If the sponsor of a conference or meeting is a non-DoD commercial entity or an entity seeking to do business with the government, then your presentation should have an ethics review.

    If your travel is being paid for (in whole or in part) by a non-Federal entity (someone other than the government), a legal ethics review is needed. These requests for legal review should come through the 59 MDW Gifts and Grants Office to 502 ISG/JAC.

    If you are receiving an honorarium or payment for speaking, a legal ethics review is required.

    If you (as the author) or your supervisor check "YES" in block 17 of the Form 3039, your research or technical documents will be forwarded simultaneously to the 502 ISG/JAC legal office and PAO for review to help reduce turn-around time. If you have any questions regarding legal reviews, please contact the legal office at (210) 671-5795/3365, DSN 473.

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement:
"The views expressed are those of the [author(s)] [presenter(s)] and do not reflect the official views or policy of the Department of Defense or its Components"

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement for research involving humans:
"The voluntary, fully informed consent of the subjects used in this research was obtained as required by 32 CFR 219 and DODI 3216.02_AFI 40-402."

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"The experiments reported herein were conducted according to the principles set forth in the National Institute of Health Publication No. 80-23, Guide for the Care and Use of Laboratory Animals and the Animal Welfare Act of 1966, as amended."

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH/TECHNICAL PUBLICATIONS/PRESENTATIONS

1. TO: CLINICAL RESEARCH	2. FROM: (Author's Name, Rank, Grade, Office Symbol)	3. GME/GHSE STUDENT:	4. PROTOCOL NUMBER:
	Jason Rall, CTR, 59th MDW ST	☐ YES ☒ NO	FWH20160019A

5. PROTOCOL TITLE: (NOTE: For each new release of medical research or technical information as a publication/presentation, a new 59 MDW Form 3039 must be submitted for review and approval.)

Evaluation of XStat Compared to Combat Gauze in a Coagulopathic Model of Uncontrolled, Junctional Hemorrhage in Sus scrofa.

6. TITLE OF MATERIAL TO BE PUBLISHED OR PRESENTED:

Evaluation of XStat and Combat Gauze in a Swine Model of Junctional Hemorrhage and Coagulopathy

7. FUNDING RECEIVED FOR THIS STUDY? ☒ YES ☐ NO FUNDING SOURCE: USAF RDT&E

8. DO YOU NEED FUNDING SUPPORT FOR PUBLICATION PURPOSES: ☐ YES ☒ NO

9. IS THIS MATERIAL CLASSIFIED? ☐ YES ☒ NO

10. IS THIS MATERIAL SUBJECT TO ANY LEGAL RESTRICTIONS FOR PUBLICATION OR PRESENTATION THROUGH A COLLABORATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA), MATERIAL TRANSFER AGREEMENT (MTA), INTELLECTUAL PROPERTY RIGHTS AGREEMENT ETC.?

☐ YES ☒ NO NOTE: If the answer is YES then attach a copy of the Agreement to the Publications/Presentations Request Form.

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CHECK APPROPRIATE BOX OR BOXES FOR APPROVAL WITH THIS REQUEST. ATTACH COPY OF MATERIAL TO BE PUBLISHED/PRESENTED.

☐ 11a. PUBLICATION/JOURNAL (List intended publication/journal.)

☐ 11b. PUBLISHED ABSTRACT (List intended journal.)

☒ 11c. POSTER (To be demonstrated at meeting: name of meeting, city, state, and date of meeting.)
Special Operations Medicine Scientific Assembly, Charlotte, NC - May 21-25, 2017

☐ 11d. PLATFORM PRESENTATION (At civilian institutions: name of meeting, state, and date of meting.)

☐ 11e. OTHER (Describe: name of meeting, city, state, and date of meeting.)

12. HAVE YOUR ATTACHED RESEARCH/TECHNICAL MATERIALS BEEN PREVIOUSLY APPROVED TO BE PUBLISHED/PRESENTED?

☐ YES ☒ NO ASSIGNED FILE # _____ DATE _____

13. EXPECTED DATE WHEN YOU WILL NEED THE CRD TO SUBMIT YOUR CLEARED PRESENTATION/PUBLICATION TO DTIC
NOTE: All publications/presentations are required to be placed in the Defense Technical Information Center (DTIC).

DATE	
25 May 2018	

14. 59 MDW PRIMARY POINT OF CONTACT (Last Name, First Name, M.I., email)	15. DUTY PHONE/PAGER NUMBER
Rall, Jason, M, jason.m.rall.ctr@mail.mil	210-292-5593

16. AUTHORSHIP AND CO-AUTHOR(S) List in the order they will appear in the manuscript.

LAST NAME, FIRST NAME AND M.I.	GRADE/RANK	SQUADRON/GROUP/OFFICE SYMBOL	INSTITUTION (If not 59 MDW)
a. Primary/Corresponding Author Rall, Jason, M	CTR	USAF 59th MDW / ST	
b. Cox, Jennifer	CTR	USAF 59th MDW / ST	
c.			
d.			
e.			

17. IS A 502 ISG/JAC ETHICS REVIEW REQUIRED (JER DOD 5500.07-R)? ☐ YES ☒ NO

I CERTIFY ANY HUMAN OR ANIMAL RESEARCH RELATED STUDIES WERE APPROVED AND PERFORMED IN STRICT ACCORDANCE WITH 32 CFR 219, AFMAN 40-401_IP, AND 59 MDWI 41-108. I HAVE READ THE FINAL VERSION OF THE ATTACHED MATERIAL AND CERTIFY THAT IT IS AN ACCURATE MANUSCRIPT FOR PUBLICATION AND/OR PRESENTATION.

18. AUTHOR'S PRINTED NAME, RANK, GRADE	19. AUTHOR'S SIGNATURE	20. DATE
Jason Rall, CTR	RALL.JASON.M.1394089725	24 April 2017
21. APPROVING AUTHORITY'S PRINTED NAME, RANK, TITLE	**22. APPROVING AUTHORITY'S SIGNATURE**	**23. DATE**
Debra Niemeyer, PhD, GS-15, DAF	NIEMEYER.DEBRA.M.1023503587	April 25, 2017

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH/TECHNICAL PUBLICATIONS/PRESENTATIONS

1st ENDORSEMENT (59 MDW/SGVU Use Only)

TO: Clinical Research Division 59 MDW/CRD Contact 292-7141 for email instructions.	24. DATE RECEIVED May 02, 2017	25. ASSIGNED PROCESSING REQUEST FILE NUMBER 17225
26. DATE REVIEWED May 03, 2017		27. DATE FORWARDED TO 502 ISG/JAC

28. AUTHOR CONTACTED FOR RECOMMENDED OR NECESSARY CHANGES: ☒ NO ☐ YES If yes, give date. _____ ☐ N/A

29. COMMENTS ☒ APPROVED ☐ DISAPPROVED

30. PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	31. REVIEWER SIGNATURE	32. DATE
ANNEKE C. BUSH, GS-14, Clinical Research Administrator	BUSH.ANNEKE.C.1042960369	May 03, 2017

2nd ENDORSEMENT (502 ISG/JAC Use Only)

33. DATE RECEIVED	34. DATE FORWARDED TO 59 MDW/PA

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39. DATE RECEIVED	40. DATE FORWARDED TO 59 MDW/SGVU
May 03, 2017	May 04, 2017

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42. PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	43. REVIEWER SIGNATURE	44. DATE
Kevin Iinuma, SSgt/E-5, 59 MDW Public Affairs		May 04, 2017

4th ENDORSEMENT (59 MDW/SGVU Use Only)

45. DATE RECEIVED	46. SENIOR AUTHOR NOTIFIED BY PHONE OF APPROVAL OR DISAPPROVAL ☐ YES ☐ NO ☐ COULD NOT BE REACHED ☐ LEFT MESSAGE

47. COMMENTS ☐ APPROVED ☐ DISAPPROVED

48. PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	49. REVIEWER SIGNATURE	50. DATE

Evaluation of XStat and Combat Gauze in a Swine Model of Junctional Hemorrhage with Coagulopathy

Jason M Rall, PhD; Jennifer M Cox, BS

59th Medical Wing, Office of the Chief Scientist, Joint Base San Antonio-Lackland, Texas

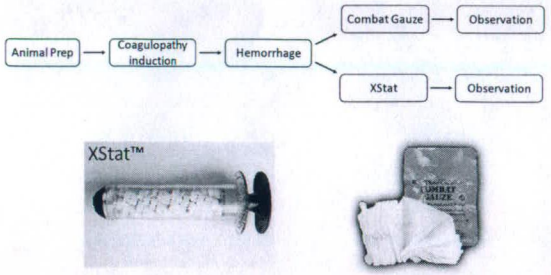
Introduction

Hemorrhage is associated with the majority of potentially survivable deaths on the battlefield.[1,2] Currently, effective and field-tested products are lacking for treatment of junctional and noncompressible injuries. XStat is a newly developed, FDA-approved product designed to treat junctional hemorrhage.[3] The product is composed of minisponges that expand on contact with blood to produce tamponade. The committee on tactical combat casualty care has recently approved the product as part of its guidelines,[4] but data is lacking to assess its efficacy in different injury types or physiologic states. Therefore, we tested XStat and QuikClot Combat Gauze (CG) in a model of uncontrolled hemorrhage in coagulopathic swine.

Materials and Methods

Large (70-90kg) male swine were used in all experiments. Following splenectomy, coagulopathy was induced by replacing 60% of the animal's estimated blood volume with room temperature Hextend. Uncontrolled hemorrhage was initiated by transection of both axillary artery and vein following dissection and lidocaine incubation. Free bleed was allowed to proceed for 30 seconds until intervention with either XStat or Combat Gauze followed by standard backing. Primary outcomes were survival, hemostasis, and blood loss.

Figure 1. Flow chart of experimental procedures



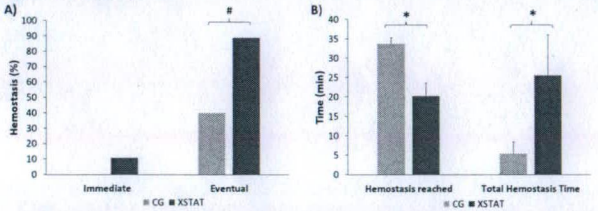
Results

Table 1. Animal Characteristics

	Combat Gauze (n=10)	XStat (n=9)	p-value
Baseline			
Weight (kg)	76.3 ± 5.0	75.6 ± 4.1	0.745
MAP (mmHg)	60.4 ± 9.2	62.5 ± 10.4	0.654
Hemoglobin (g/dL)	9.9 ± 0.6	10.1 ± 0.9	0.557
INR	1.06 ± 0.05	1.09 ± 0.05	0.337
Temperature (°C)	37.3 ± 0.3	37.1 ± 0.7	0.710
Post Coagulopathy Induction			
Hextend Coagulopathy (mL)	2975 ± 192	2947 ± 159	0.728
Blood Removed (g)	2986 ± 198	3023 ± 222	0.704
Pre-injury MAP (mmHg)	68.7 ± 10.1	66.4 ± 6.4	0.574
Hemoglobin (g/dL)	4.2 ± 0.4*	3.9 ± 0.4*	0.167
INR	1.42 ± 0.10*	1.49 ± 0.09*	0.228
Temperature (°C)	35.2 ± 0.6*	35.1 ± 1.0*	0.841
Post Intervention			
Survival	0/10 (0%)	1/9 (11%)	0.474
Time of Death (min)	35.4 ± 16.0	48.9 ± 29.1	0.438

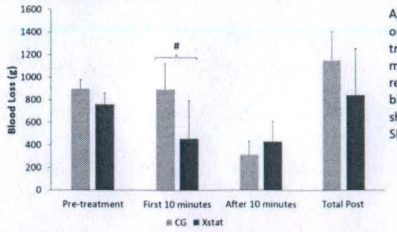
MAP, Mean Arterial Pressure; INR, International Normalized Ratio. Values are mean ± standard deviation. *, $p < 0.01$ vs baseline

Figure 2. Hemostasis



A) Hemostasis achievement shown as either immediately (p=0.45) after application or eventual hemostasis (p=0.057). **B)** Time that hemostasis was reached (p=0.028) or the total time the wound was hemostatic (p=0.029). Error bars are SEM. *, $p < 0.05$. #, $p < 0.10$

Figure 3. Blood Loss



Amount of blood suctioned from outside wound separated into pre-treatment (p=0.48), initial 10 minutes after treatment (p=0.058), remaining time (p=0.38). Total blood post-treatment is also shown (p=0.17). Error bars are SEM. #, $p < 0.10$

Conclusion

The results presented here show:

- 60% Hextend/blood replacement produces a dilutional coagulopathy with hypothermia
- No differences in survival were observed
- XStat achieved a higher rate of hemostasis
- XStat-treated animals loss less blood during the first 10 minutes following intervention
- Continued testing and evaluation of XStat should be performed

References

1. Eastridge BJ, Mabry RL, Seguin P, et al. Death on the battlefield (2001-2011): implications for the future of combat casualty care. *J Trauma Acute Care Surg.* 2012; 73:S431-437.
2. Holcomb J, Caruso J, McMullin N, et al. Causes of death in US Special Operations Forces in the global war on terrorism: 2001-2004. *US Army Med Dep J.* 2007; Jan-Mar: 24-37.
3. Mueller GR, Pineda TJ, Xie HX, et al. A novel sponge-based wound stasis dressing to treat lethal noncompressible hemorrhage. *J Trauma Acute Care Surg.* 2012; 73:S134-139.
4. Sims K, Montgomery HR, Dituro P, et al. Management of External Hemorrhage in Tactical Combat Casualty Care: The Adjunctive Use of XStat™ Compressed Hemostatic Sponges: TCCC Guidelines Change 15-03. *J Spec Oper Med.* 2016; 16(1):19-28.

Acknowledgements

We are grateful for the technical assistance provided by the staff of the Clinical Research Division of the USAF 59th Medical Wing. This work was supported by a grant from the Air Force Medical Service Research Development Test & Evaluation program.

Disclaimer

The views expressed here are those of the authors and do not necessarily reflect the official policy or position of the Department of the Defense or its components. The experiments reported herein were conducted according to the principles set forth in the National Institute of Health Publication No. 80-23, Guide for the Care and Use of Laboratory Animals and the Animal Welfare Act of 1966, as amended.